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ABSTRACT

The Web offers the perfect technology and environment for precision learning because learners can be uniquely identified, relevant content can be specifically personalized, and subsequent response and progress can be monitored, supported, and assessed. Technologically, researchers are making rapid progress realizing the personalized learning dream with object architecture and adaptive technology. The missing link is a truly personal, whole-person understanding of how individuals learn (more than just how they process and build knowledge). Primarily cognitive solutions are often no longer capable of meeting sophisticated online learning needs in the Information Age. This paper provides design guidelines for learning environments from an alternative whole-person perspective. Offering a unique perspective about learning in the 21st century, this paper introduces learner-difference profiles describing sources for individual learning differences, specific reasons why some learners are more successful than others, strategies for helping learners improve Web learning ability, and design guidelines that tap into the dominant influence of emotions, intentions, and social factors on learning. These insights offer simple ways to enhance and evaluate contemporary Web instructional designs so that they instill the right habits for continuous learning and performance improvement. (Author/AEF)

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Successful Web Learning Environments: New Design Guidelines

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Abstract

The Web offers the perfect technology and environment for precision learning because learners can be uniquely identified, relevant content can be specifically personalized, and subsequent response and progress can be monitored, supported, and assessed. Technologically, researchers are making rapid progress realizing the personalized learning dream with object architecture and adaptive technology. The missing link is a truly personal, whole-person understanding of how individuals learn (more than just how they process and build knowledge). Primarily cognitive solutions are often no longer capable of meeting sophisticated online learning needs in the Information Age. This paper provides design guidelines for learning environments from an alternative whole-person perspective.

Offering a unique perspective about learning in the 21st century, this paper introduces (a) learner-difference profiles describing sources for individual learning differences, (b) specific reasons why some learners are more successful than others, (c) strategies for helping learners improve Web learning ability, and (d) design guidelines that tap into the dominant influence of emotions, intentions, and social factors on learning. These insights offer simple ways to enhance and evaluate contemporary Web instructional designs so that they instill the right habits for continuous learning and performance improvement.

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Successful Web Learning Environments: New Design Guidelines

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Abstract

The Web offers the perfect technology and environment for precision learning because learners can be uniquely identified, relevant content can be specifically personalized, and subsequent response and progress can be monitored, supported, and assessed. Technologically, researchers are making rapid progress realizing the personalized learning dream with object architecture and adaptive technology. The missing link is a truly personal, whole-person understanding of how individuals learn (more than just how they process and build knowledge). Primarily cognitive solutions are often no longer capable of meeting sophisticated online learning needs in the Information Age. This paper provides design guidelines for alternative learning environments from a whole-person perspective.

Offering an alternative perspective about learning in the 21st century, this paper introduces (a) learner-difference profiles describing sources for individual learning differences, (b) specific reasons why some learners are more successful than others, and (c) strategies for helping learners improve Web learning ability, and (d) design guidelines that tap into the dominant influence of emotions, intentions, and social aspects on learning. These insights offer simple ways to enhance and evaluate contemporary Web instructional designs so that they instill the right habits for improved learning and performance.

1. Introduction

This paper is aimed at readers wanting new perspectives on designing Web learning environments. The purpose is to suggest that conventional classroom designs methodologies and solutions are often not suitable for Web learning and as designers we need to consider more sophisticated solutions. This paper offers explanations about the higher-order psychological influences on Web learning, describes when and why some learn more successfully than others, and presents practical design guidance that supports successful Web learning and performance. Hopefully readers will examine their own position on (a) considering the influence of key psychological factors (conative, affective, cognitive, and social) that influence learning differently, (b) recognizing critical links between Web learning environments, learning differences, and learning ability, and (c) developing supportive Web learning environments that match individual learning differences.

2. Background

We are still very much in the experimental stage for creating Web learning environments. Much still needs to be learned about designing successful environments, both technically and pedagogically. In 1957, Cronbach [1] challenged the field to find "for each individual the treatment [or environment] which he can most easily adapt." He suggested that consideration of the treatments and individual together would determine the best payoff because we "can expect some attributes of person to have strong interactions with treatment variables."
Since then, researchers are still looking at designing personalized environments for each individual for the best payoff. Today, a key consideration in this research is determining dominant sources for individual learning differences and using more sophisticated learning theories for personalizing online learning environments. However, much of our evolving understanding and research on individual learning differences remains focused on cognitive interests and intrinsic or extrinsic mechanisms for information processing and knowledge building.

Unfortunately, primarily cognitive solutions often overlook fundamental whole-person learning needs (such as the dominant influence of emotions and intentions). The cognitive solutions support traditional roles where an instructor is in the classroom managing emotions, intentions, and social issues, in addition to the cognitive issues.

Today, traditional classroom (primarily cognitive) solutions are not always viable online solutions. Online, learners need to want and intend to become more self-supporting learners, independent of the instructor. Too many students emerging from classroom environments are ill-equipped to handle online learning environments. Recognizing the online learning ability gap and providing solutions that consider the whole-person perspective is a step in helping student transition to more successful, self-directed online learning. Schools and industry require a more sophisticated understanding of the psychological characteristics of learning. Especially important is learning the helps learners want and intend to improve performance and negotiate constant improvement and change, independently, passionately, and productively. As companies decide on next-generation e-learning alternatives, they need to first understand the dominant power of emotions and intentions on learning, and second, seek solutions that use this understanding to revolutionize the presentation of learning and performance solutions.

For many years Russell [5] has been conducting comprehensive comparative research on using technology for distance education. After reviewing 355 research studies, to examine what works or does not work, Russell [5] states that combined research results are largely ambiguous and that "individual differences in learning dictate that technology will facilitate learning for some, but will probably inhibit learning for others, while the remainder experience no significant difference." He adds that "when lumping all the students together into a fictional 'mass' those who benefit from the technology are balanced by a like number who suffer; when combined with the 'no-significant-difference' majority, the conglomerate yields the widely reported 'no-significant-difference' results." The confusing or inconsistent results arising from the research literature clearly indicates something critical is missing from our cognitive-rich learning constructs and contemporary educational technology theories. From another perspective, Snow and Farr [6] suggested that sound learning theories are missing and realistically require "a whole person view that integrates cognitive, conative, and affective aspects." These researchers advised that educators cannot ignore or overlook these key psychological aspects because they interact in important, complex ways to support learning and performance outcomes. Otherwise, explanations about learning differences will be ambiguous and isolated from reality [6].

3. Successful Learning Theory

This paper uses *Learning Orientations* [3], (http://www.trainingplace.com/source/research/learningorientations.htm#lo), to describe dominant sources (i.e., emotions and intentions along with cognitive and social factors) for learning differences. Learning orientations (e-Learning Orientations for online learners) developed during previous research [4], represent how individuals (aggregated by varying beliefs, emotions, intentions, and ability), plan and set goals, commit and expend effort, and then experience learning to attain goals.

There are four learning orientations: transforming, performing, conforming, and resistant. These profiles describe a learner's proclivity to learn or perform and provide specific scales for measuring common learner-difference attributes. Learning orientations are an effective way to differentiate the audience according to the higher-order psychological factors that powerfully impact learning and performance and foster how we develop, manage, and sometimes override our cognitive learning preferences, strategies, and skills. These learner-difference profiles differentiate the audience, guide analysis and design of instruction and environment, and tailor solutions that improve learning ability and the learning experience [2].

Based on the Successful Learning Theory (http://www.trainingplace.com/source/research/successfullearning.htm), learning orientations or e-learning orientations describe higher-order psychological attributes and learner-difference variables for successful learning, offers explanations for fundamental learning differences, and suggests strategies for accommodating learning needs for audiences differentiated by learning orientation. Learning orientations (a) represent conative, affective, cognitive, and social influences on learning, from a whole-person perspective, (b) introduce higher-order psychological aspects into audience analysis and instructional design methodology, and (c) provide guidelines for differentiating the audience.

Table 1. Descriptions for Four Learning Orientations

Orientation	Conative/Affective Aspects	Strategic Planning & Committed Learning Effort	Learning Autonomy
TRANSFORMING LEARNER (Transformance)	Focus strong passions and intentions on learning. Be an assertive, expert, highly self-motivated learner. Use holistic-thinking and exploratory learning to transform to high, personal standards.	Set and accomplish personal short- and long-term challenging goals that may not align with goals set by others; maximize effort to reach personal goals. Commit great effort to discover, elaborate, and build new knowledge and meaning.	Assume learning responsibility and self-manage goals, learning, progress, and outcomes. Experience frustration if restricted or given little learning autonomy.
PERFORMING LEARNER (Performance)	Focus emotions/intentions on learning selectively or situationally. Be a self-motivated, focused learner when the content appeals. Meet above-average group standards only when the benefit appeals.	Set and achieve short-term, task-oriented goals that meet average-to-high standards; situationally minimize efforts and standards to reach assigned or negotiated standards. Selectively commit measured, detailed effort to assimilate and use relevant knowledge and meaning.	Will situationally assume learning responsibility in areas of interest but willingly give up control in areas of less interest. Prefer coaching and interaction for achieving goals.
CONFORMING LEARNER (Conformance)	Focus intentions and emotions cautiously and routinely as directed. Be a low-risk, modestly effective, extrinsically motivated learner. Use learning to conform to easily achieved group standards.	Follow and try to accomplish simple task-oriented goals assigned and guided by others, then try to please and conform; maximize efforts in supportive environments with safe standards. Commit careful, measured effort to accept and reproduce knowledge to meet external requirements.	Assume little responsibility, manage learning as little as possible, be compliant, want continual guidance, and expect reinforcement for achieving short-term goals.
RESISTANT LEARNER (Resistance)	Focus on not cooperating. Be an actively or passively resistant learner. Avoid using learning to achieve academic goals assigned by others.	Consider lower standards, fewer academic goals, conflicting personal goals, or no goals; maximize efforts to resist assigned or expected goals either assertively or passively. Chronically avoid learning (apathetic, frustrated, discouraged, or disobedient).	Assume responsibility for not meeting goals set by others, and set personal goals that avoid meeting formal learning requirements or expectations.

Situational Performance or Resistance: Learners may situationally improve, perform, or resist in reaction to positive or negative learning conditions or situations

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Table 2 Instructional Strategies for Three Learning Orientations

Learning Issues	Transforming Learners	Performing Learners	Conforming Learners
General Environment	Prefer loosely structured, mentoring environments that promote challenging goals, discovery, and self-managed learning.	Prefer semi-complex, semi-structured, coaching environments that stimulate personal value and provide creative interaction.	Prefer simple, safe, structured environments that help learners avoid mistakes and achieve easy learning goals in a linear fashion.
Goal-Setting and Standards	Set and accomplish personal short- and long-term challenging goals that may not align with goals set by others; maximize effort to reach personal goals.	Set and achieve short-term, task-oriented goals that meet average-to-high standards; situationally minimize efforts and standards to reach assigned or negotiated standards.	Follow and try to accomplish simple, task-oriented goals assigned by others—try to please and conform; maximize efforts in supportive environments with safe standards.
Learner Autonomy and Responsibility	Self-motivated to assume learning responsibility and self-direct goals, learning, progress, and outcomes. Experience frustration if restricted or given little learning autonomy.	Situationally self-motivated to assume learning responsibility in areas of interest. Will willingly give up control and extend less effort for topics of less interest or in restrictive environments.	Cautiously motivated to assume little responsibility, self-direct learning as little as possible, and like to be more compliant
Knowledge Building	Commit great effort to discover, elaborate, and build new knowledge and meaning.	Selectively commit measured effort to assimilate and use relevant knowledge and meaning.	Commit careful, measured effort to accept and reproduce knowledge to meet external requirements.
Problem Solving	Prefer case studies and complex, whole-to-part, problem solving opportunities.	Prefer competitive part-to-whole problem solving.	Prefer scaffolded support for simple problem solving.
User Interface	Open learning interface for high-stimulation and -processing capacity	Hands-on learning interface for medium stimulation and processing capacity	Consistent and simple interface for minimal stimulation and processing capacity
Presentation	Prefer occasional mentoring and interaction for achieving goals (MENTORING).	Prefer continual coaching and interaction for achieving goals (COACHING)	Prefer continual guidance and reinforcement for achieving short-term goals (GUIDING)
Feedback	Prefer inferential feedback.	Prefer concise feedback.	Prefer explicit feedback.
Motivational Feedback	Discovery	Guided Discovery	Reflective
Learning Module Size	Short, concise, big picture with links to more detail if necessary	Medium, brief overview with focus on practical application	Longer, detailed guidance, in a step wise fashion
Examples	One good example and one bad example.	A few good and bad examples.	Multiple good and bad examples
Information Need	Holistic, specific information needed to solve a problem	General interests, practice, short-term focus	Guidance to fill a requirement
Content Structuring	Prefer freedom to construct own content structure	Prefer a general instruction, limited ability to reorganize	Prefer to let others decide content structure
Sequencing Methods	Hypertext, sorting by meta-tags, precise access	Semi-linear, logical branching, access by subtopic	Linear, page-turner representations general access

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Peer Interaction	High, belief that everyone can commit and contribute valuable insights	Moderate, easily frustrated by time required for peer interaction and theory	Minimal, seldom values peer comments, wants answers from the instructor
Quality of Assignments	Usually far exceeds stated requirements	Fulfills requirements but does little more than that	May not meet the minimal requirements
Questioning Habits	Asks probing, in-depth questions about content	Asks questions to complete assignments, too busy taking notes	Asks mechanistic questions about assignments

4. Conclusions

Hopefully, these suggestions will contribute to more successful learning via the Web and a greater understanding about fundamental learning differences. When we design a course with only a universal type of learner in mind we unintentionally set learners up for frustration and possible failure. If we are serious about providing good online instruction for learners, we must provide multiple ways to provide instruction and environments so that all learners have opportunities for success. These descriptions are a first step in recognizing and accommodating individual learning differences. They are also an important step in recognizing the expanded, dominant role and impact of emotions and intentions on learning, especially since online learners need to become more self-motivated and self-directed learners.

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